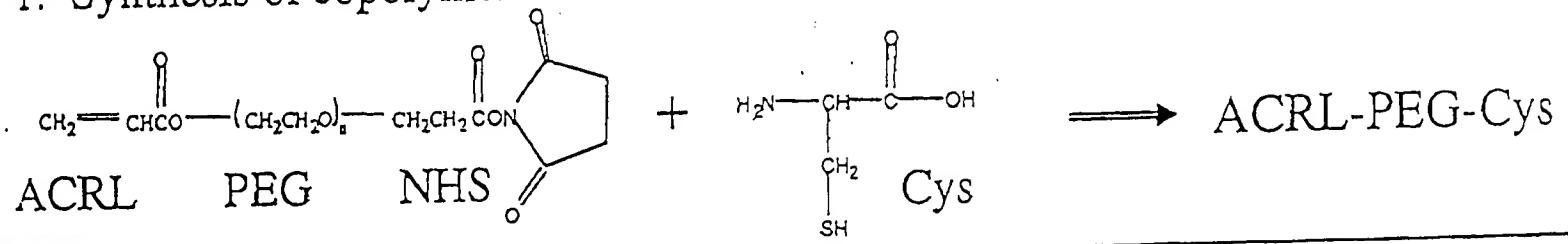
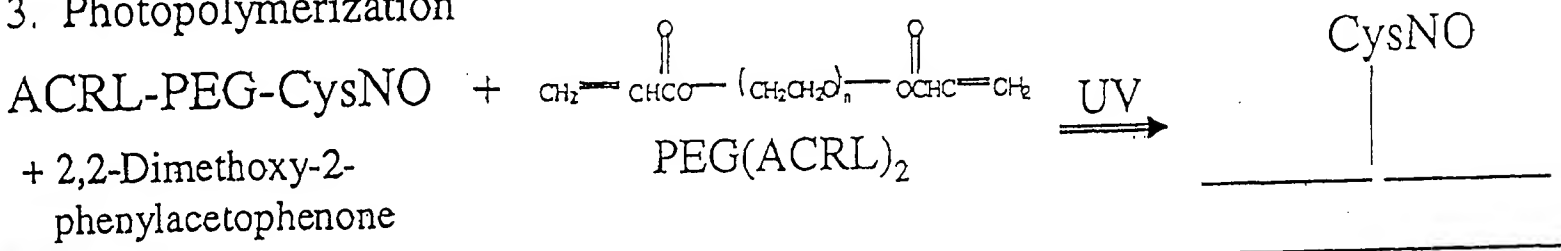
Synthesis of S-nitrosocysteine hydrogels

1. Synthesis of copolymer



2. Formation of S-nitrosocysteine

3. Photopolymerization



4. Release of NO

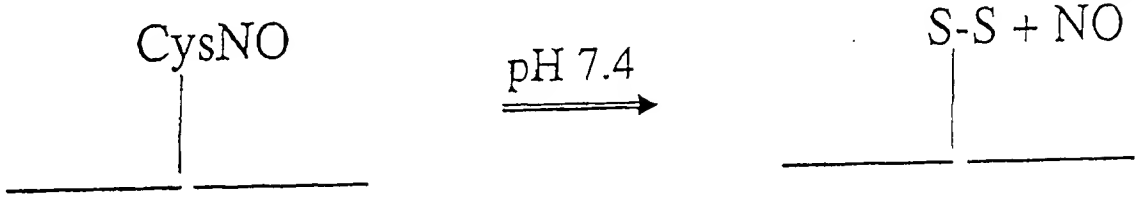
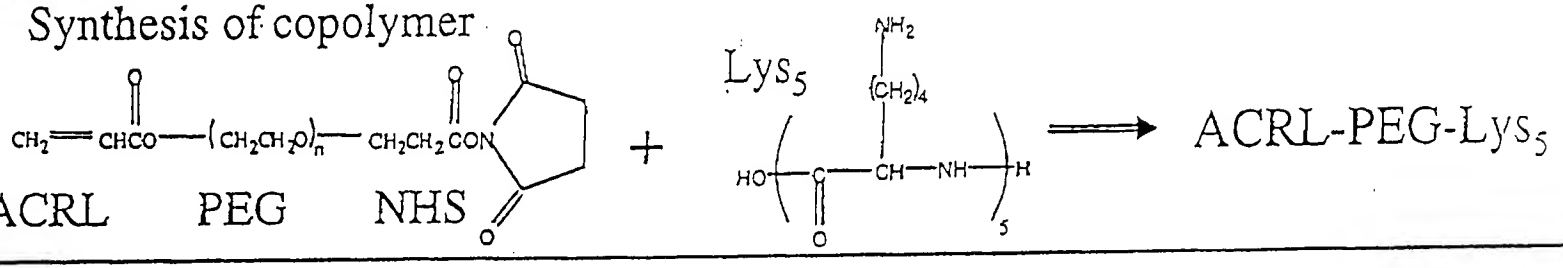


FIGURE 1

Synthesis of Lys_5-NO-nucleophile complex hydrogels

1. Synthesis of copolymer

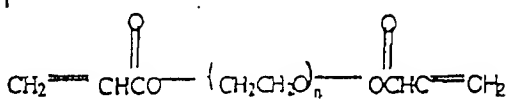


2. Formation of NO-nucleophile complex

$$\text{ACRL-PEG-Lys}_5 + \text{NO gas in } H_2O \longrightarrow \text{ACRL-PEG-(Lys-[N(O)NO]}^-)_5$$

3. Photopolymerization

ACRL-PEG-(Lys-[N(O)NO]$^-$)$_5$ + 2,2-Dimethoxy-2-phenylacetophenone + PEG(ACRL)$_2$ $\xrightarrow{\text{UV}}$ (Lys-[N(O)NO]$^-$)



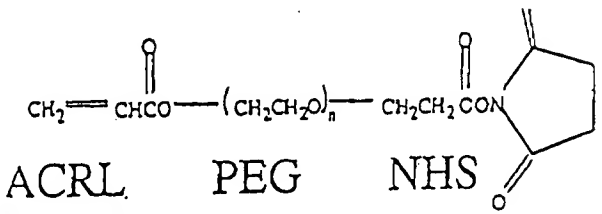
4. Release of NO

(Lys-[N(O)NO]$^-$)$_5$ $\xrightarrow{\text{pH 7.4}}$ $Lys_5 + (2NO)_5$

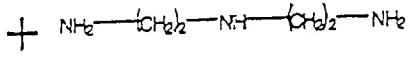
FIGURE 2

Synthesis of DETA-NO-nucleophile complex hydrogels

1. Synthesis of copolymer



ACRL PEG NHS



DETA

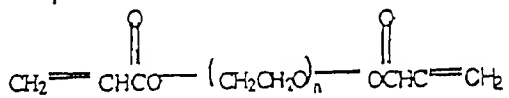
ACRL-PEG-DETA

2. Formation of NO-nucleophile complex

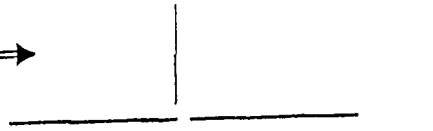
ACRL-PEG-DETA + NO gas in H_2O ⟹ ACRL-PEG-DETA-[N(O)NO]$^-$

3. Photopolymerization

ACRL-PEG-DETA-[N(O)NO]$^-$ + 2,2-Dimethoxy-2-phenylacetophenone + $PEG(ACRL)_2$

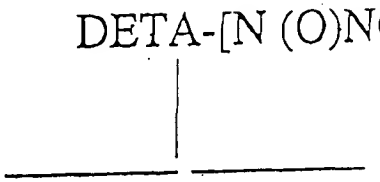


UV ⟹



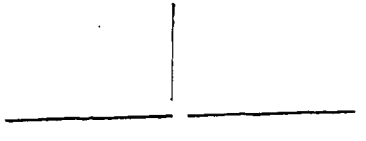
DETA-[N (O)NO]$^-$

4. Release of NO



DETA-[N (O)NO]$^-$

pH 7.4 ⟹



DETA +2NO

FIGURE 3

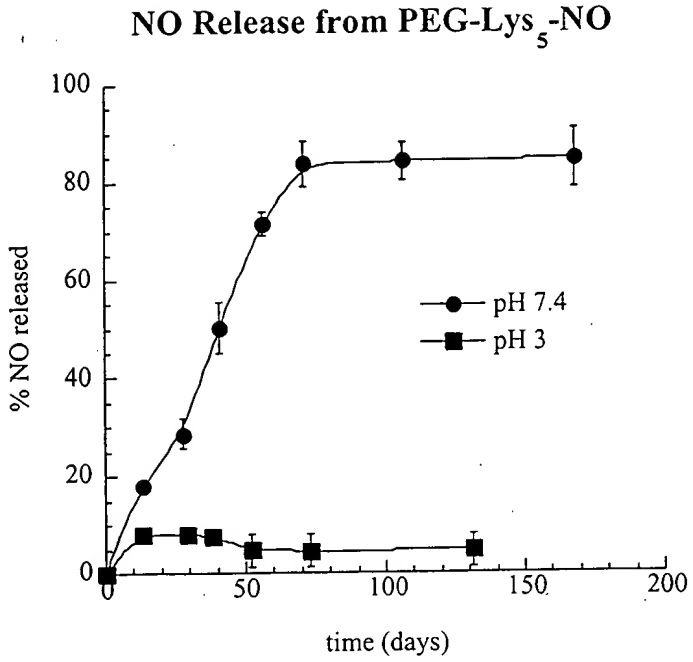


FIGURE 4

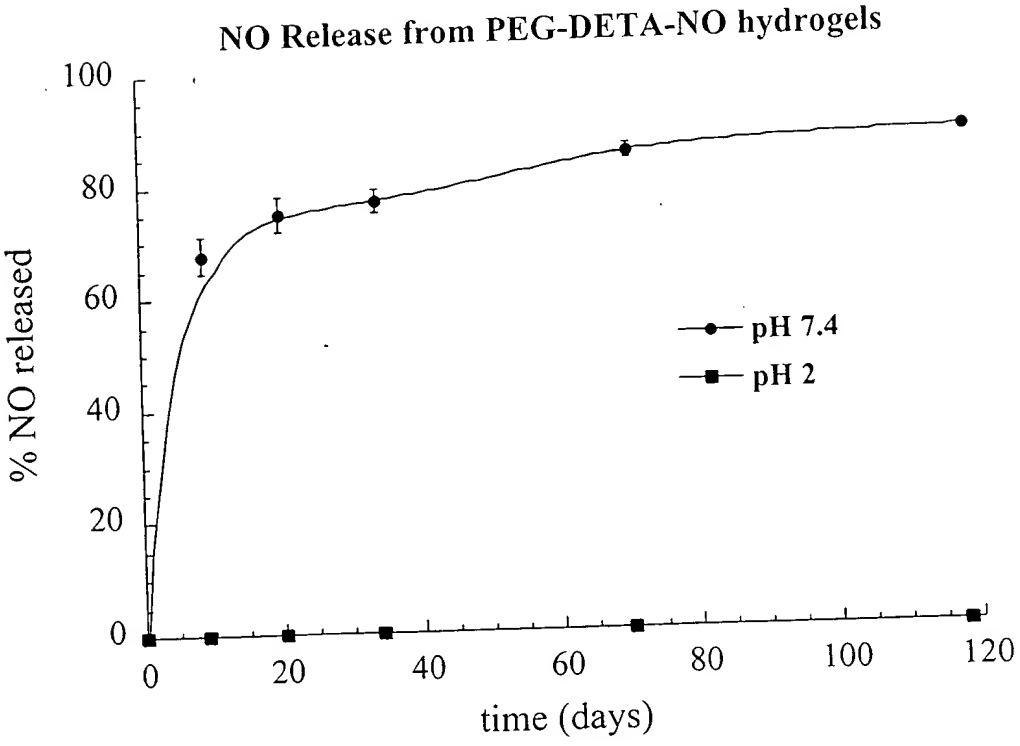


FIGURE 5

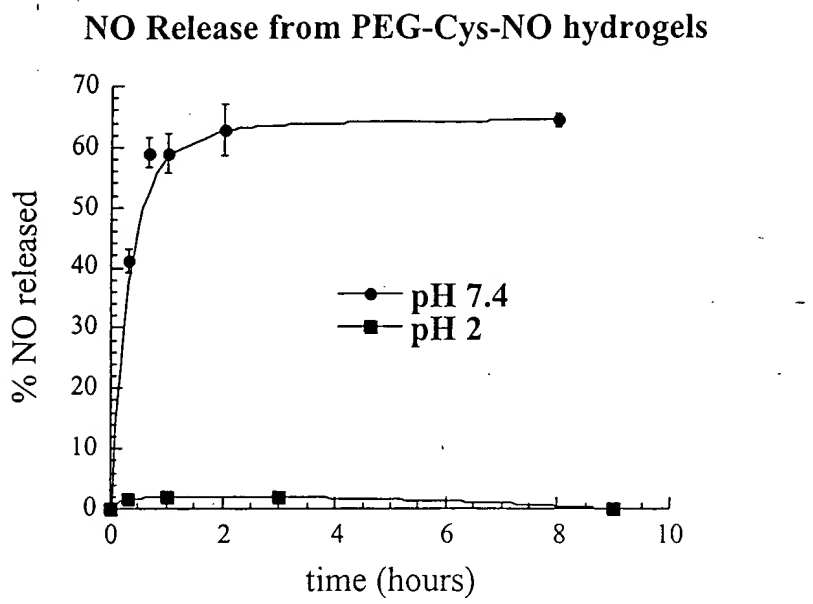


FIGURE 6

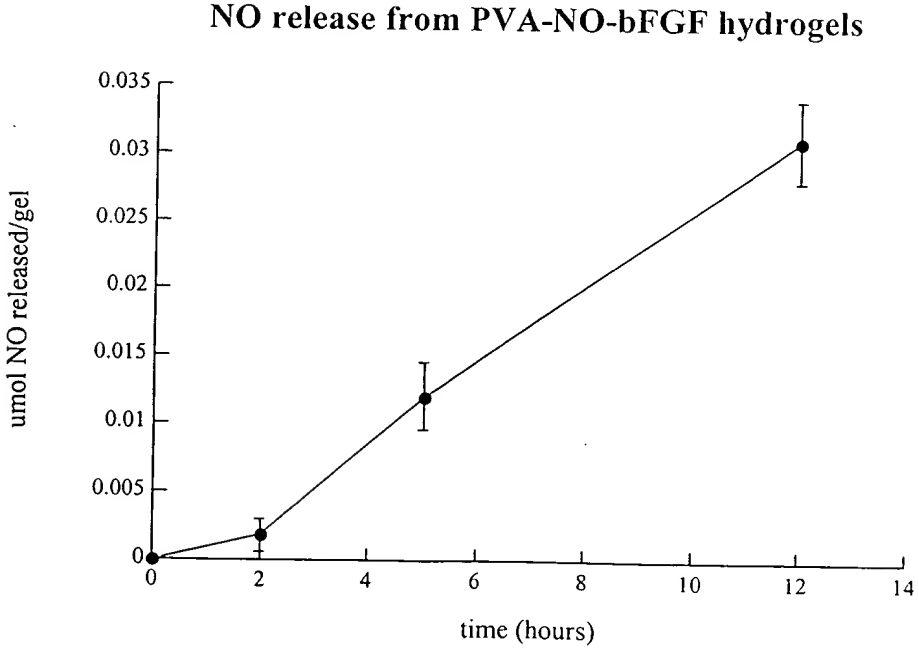


Figure 7

Lys-NO hydrogels inhibit SMC proliferation

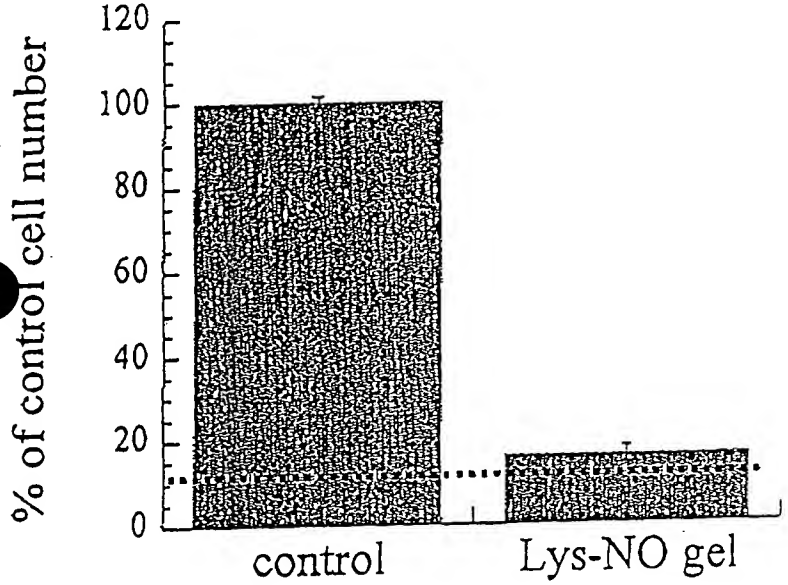


FIGURE 8A

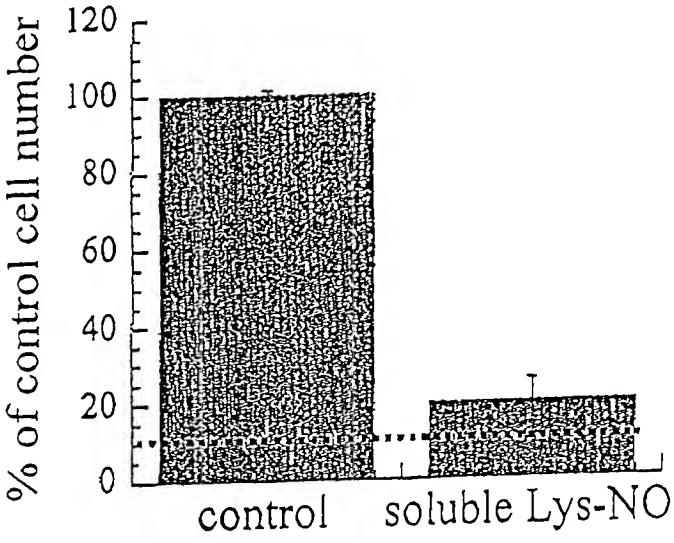


FIGURE 8B

DETA-NO hydrogels inhibit SMC proliferation

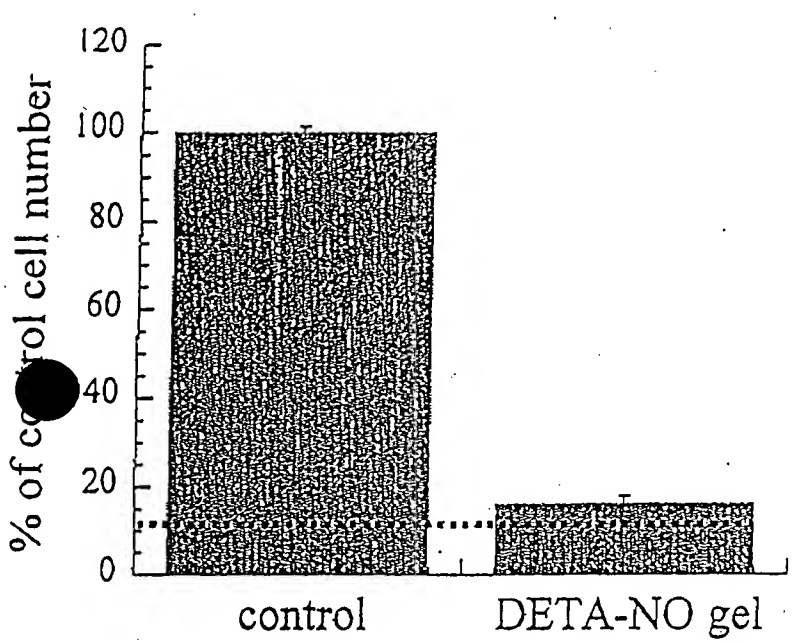
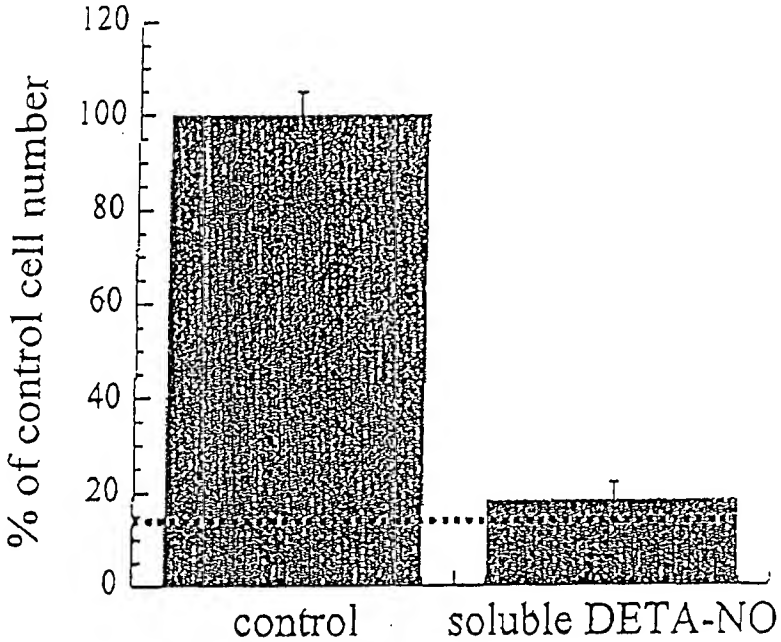
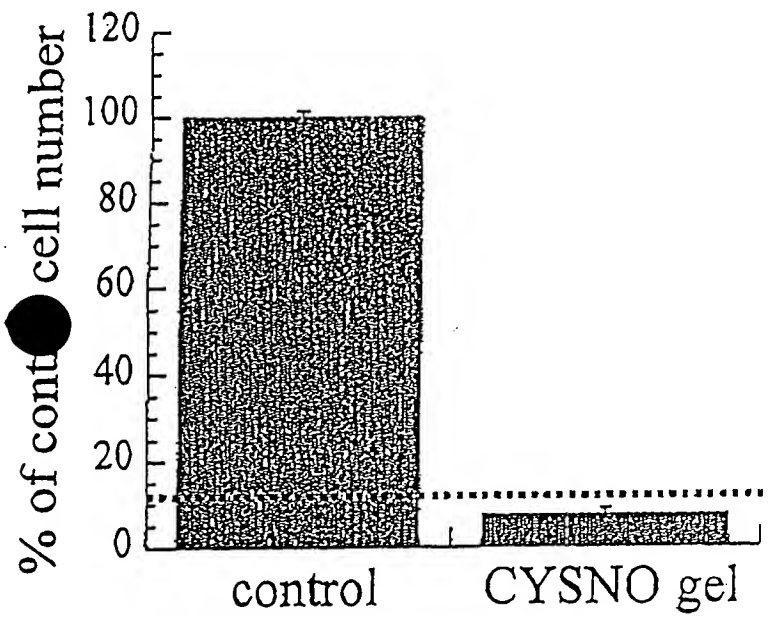


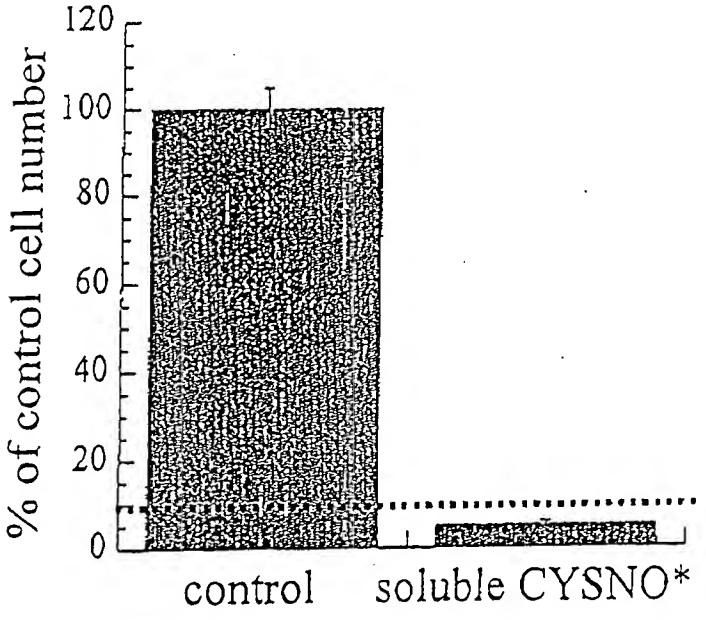
FIGURE 9A



09653406 .090 FIGURE 9B

CYSNO hydrogels inhibit SMC proliferation





* indicates different CYSNO concentration than used for hydrogel

FIGURE 10A

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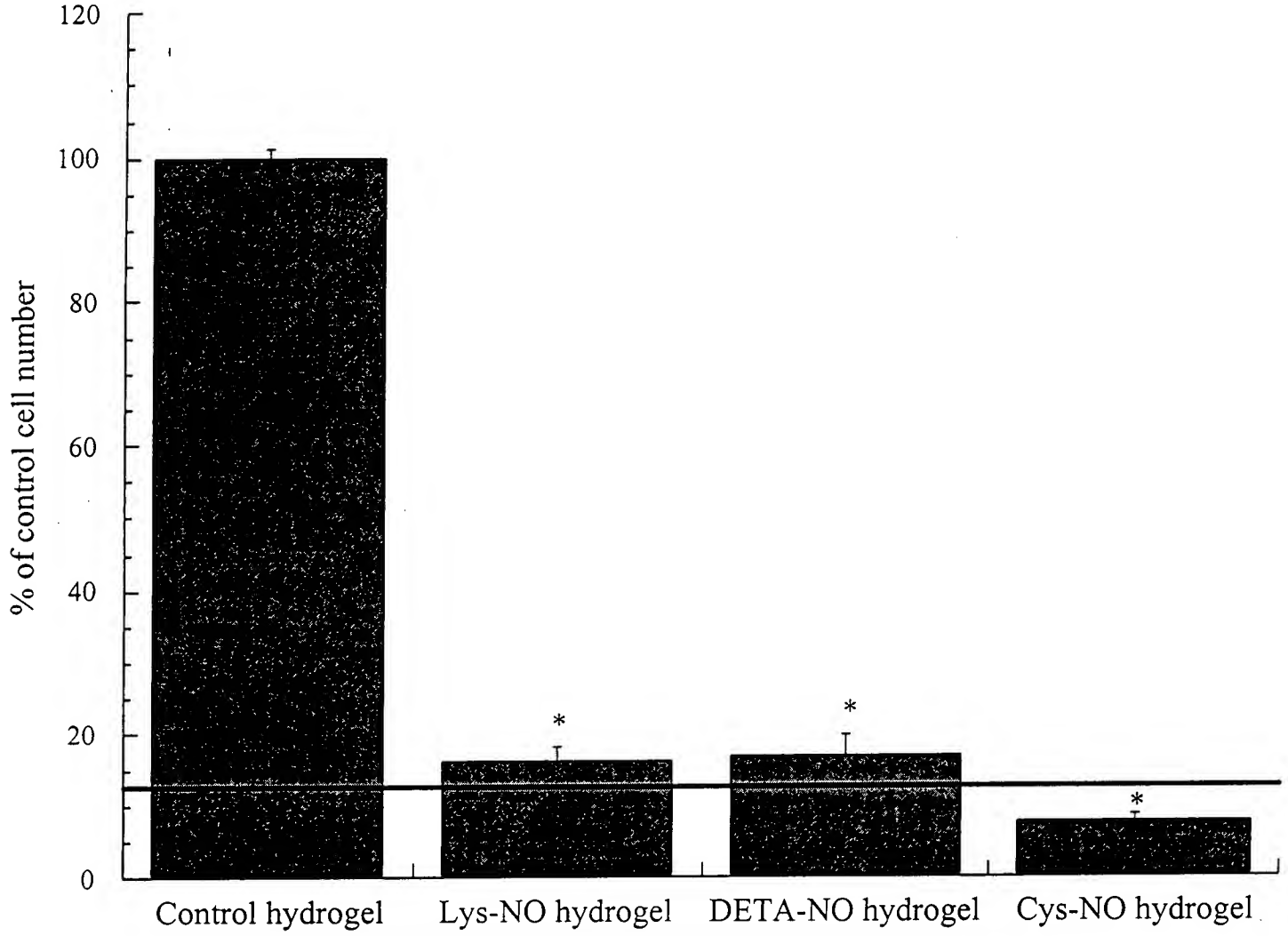
FIGURE 10B

NO-releasing hydrogels inhibit smooth muscle cell growth



09653406 .090100

FIGURE 11

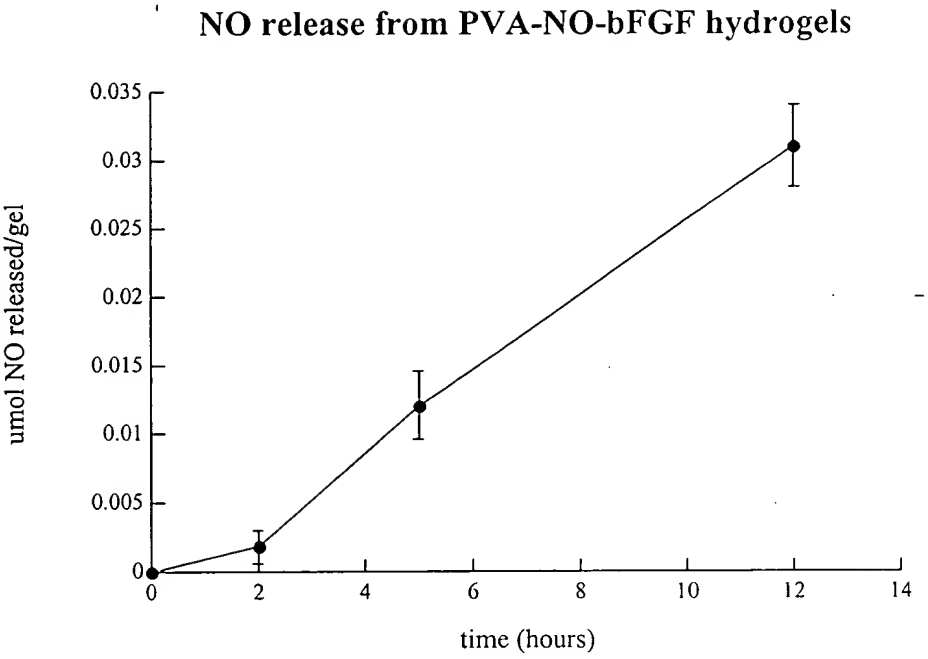


Figure 12A

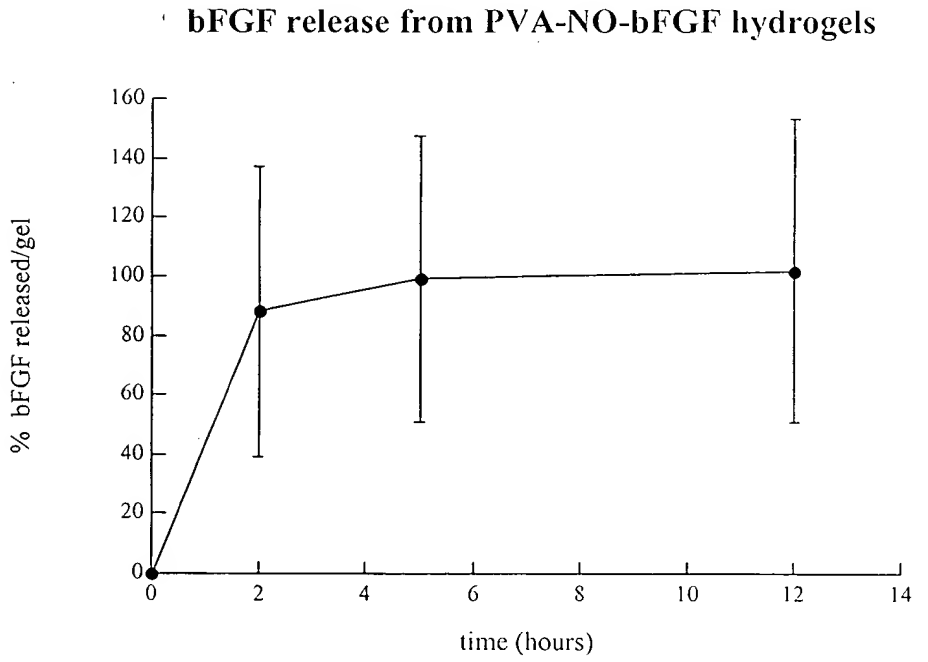


Figure 12B